भारतीय मानक

Indian Standard

IS 18139 (Part 2) : 2023

औद्योगिक स्क्रीन — विशिष्टि

भाग 2 तार स्क्रीन

Industrial Screen — Specification

Part 2 Wire Screen

ICS 73.120

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Sieves, Sieving and Other Sizing Methods Sectional Committee, CED 55

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Sieves, Sieving and Other Sizing Methods Sectional Committee had been approved by the Civil Engineering Division Council.

Industrial screens are used in different activities in various industries for screening purposes including for separation or grading of particles. According to the nature of the process and required percentage opening area, industrial screen can be manufactured in the form of woven wire cloth, wire screen or perforated plate screen. A required percentage opening can be achieved with the various combinations of wire diameter/plate thickness, type of weave/shape of opening and pitch (in plates). The materials of wire and plates can be selected as per the process requirements.

The sizes within each series follow a geometric progression. Therefore, each size of a series differs from the successive size by a constant percentage. Apart from the omission of a few unusual values in the range of the very small sizes, the ratios of the successive sizes are as follows:

Series from IS 1076 (*Part* 1)	*Ratio*
R 10	1.25
R 20	1.12
R 40	1.06

This standard has been brought out in the following parts:

Part 1 Woven wire cloth screen
Part 2 Wire screen
Part 3 Perforated plate screen

The woven wire cloth screen is manufactured by weaving of wire; wire screen is manufactured by pre-crimping or welding of wire; and perforated plate screen is manufactured by perforation in plates.

This standard (Part 2) covers requirements of industrial screen manufactured by pre-crimping or welding of wire. The nominal sizes of openings specified in this standard are taken from the R 10, R 20 and R 40/3 series of preferred numbers in accordance with IS 1076 (Part 1) : 1985/ISO 3 : 1973 'Preferred numbers: Part 1 Series of preferred numbers'. For making R 40/3 series every third value of R 40 series is taken.

In the formulation of this standard due weightage has been given to international co-ordination among the standards and practices prevailing in different countries in addition to relating it to the practices in the field in this country. This has been met by deriving assistance from the following publications:

ISO 14315 : 1997 Industrial wire screens — Technical requirements and testing

ISO 4783 (Part 3) : 1981 Industrial wire screens and industrial wire cloth — Guide to the choice of aperture size and wire diameter combinations: Part 3 Preferred combinations for pre-crimped or pressure-welded wire screens

ASTM E2016-15 Standard specification for industrial woven wire cloth

The composition of the Committee responsible for the formulation of this standard is given in Annex E.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

INDUSTRIAL SCREEN — SPECIFICATION

PART 2 WIRE SCREEN

1 SCOPE

This standard lays down the requirements regarding material, dimensions, construction and finish of industrial wire screen for pre-crimped and welded wire screen used for industrial screening purposes. It applies to industrial screen of aperture size from 1 mm up to 125 mm.

2 REFERENCES

The standards given below contain provisions which, through reference in this standard, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreement based on this standard are encouraged to investigate the possibility of applying the most recent edition of these standards.

IS No.	*Title*
IS 5742 : 2021	Glossary of terms relating to industrial screen and screening (*first revision*)
IS 18061 : 2023	Selection of aperture size, percentage open area and wire diameter combination for industrial screens — Guidelines

3 TERMS AND DEFINITIONS

For the purpose of this standard, the definitions given in IS 5742 and the definition given below shall apply.

3.1 Aperture Width (w)

Distance between two adjacent warp or weft wires, measured in the projected plane at the mid positions (*see* Fig. 1).

3.2 Major Blemishes

Production defects which significantly affect the aperture width or surface quality of the wire screen.

3.3 Mass per Unit Area (P_A)

Quantity calculated using the following formula:

$$P_\mathrm{A} = \frac{d^2.\rho}{618.1\,.\,(w+d)}$$

where

d = wire diameter, in mm;
w = aperture width, in mm;
ρ = material density, in kg/m^3; and
P_A = mass per unit area, in kg/m^2.

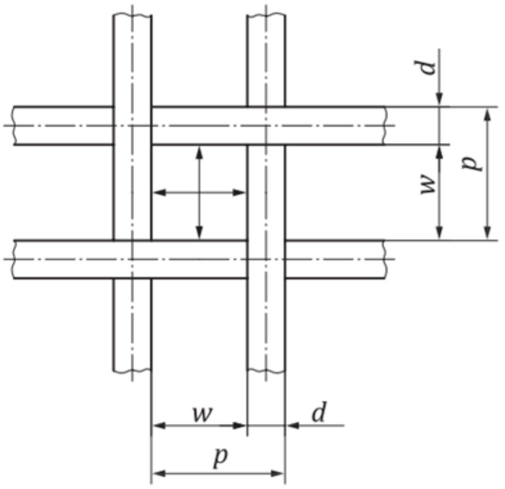


FIG. 1 APERTURE WIDTH, WIRE DIAMETER AND PITCH

3.4 Number of Apertures per Unit Length (n)

Number of apertures which are counted in a row, one behind the other on a given unit length.

3.5 Open Screening Area (A_o)

Percentage of the surface of all the apertures in the total screening surface.

NOTE — The open screening area is calculated as the ratio of the square of the nominal aperture width, w and the square of the nominal pitch, $p = w + d$, rounded to a full percentage value:

$$A_0 = \frac{w^2}{(w+d)^2} \times 100 \text{ percent}$$

3.6 Pitch (ρ)

Distance between the mid-points of two adjacent wires.

NOTE — The pitch is the sum of the aperture width, w, and the wire diameter, d (*see* Fig. 1).

3.7 Warp

All wires running lengthwise in the screen as manufactured.

3.8 Weft

All wires running crosswise in the screen as manufactured.

3.9 Wire Diameter (d)

Diameter of the wire in the wire screen.

4 MANUFACTURING AND CONSTRUCTION

4.1 The wire used in the manufacture of the wire screen shall be well and cleanly drawn free from scale, inequalities, splits, etc.

4.2 Any suitable material such as steel, bronze, brass, stainless steel, aluminium and synthetic material may be used as per relevant Indian Standards. The selection of material is done in such a way that screen material should be compatible with the process and the material to be screened and should not be detrimental in achieving desired sieving quality.

The following factors are considering during the selection of wire screen material:

a) The final application of the wire screen, for example, resistance to environmental corrosion, compatibility with food products, etc., and

b) Further processing, for example, suitability for shaping, welding, and surface treatment.

4.3 Pre-crimped or welded screens for industrial purposes shall be manufactured in various types of weaves, as given in Table 1.

Table 1 Types of Weaves and Screen Conversion Factors
(*Clause* 4.3)

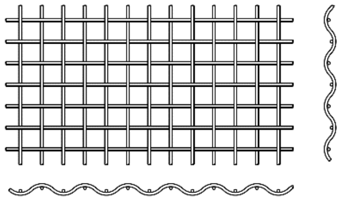
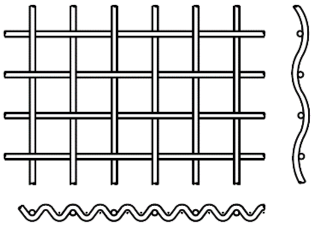
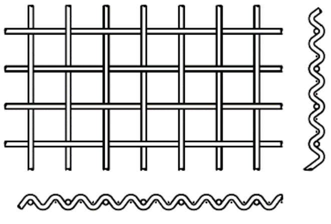
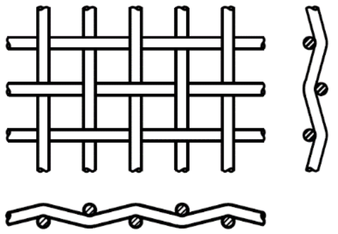
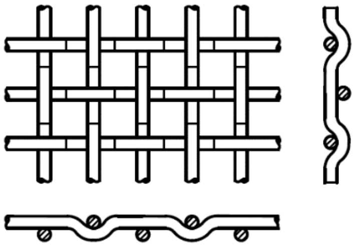
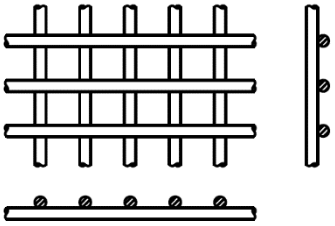
Sl No. (1)	Type (2)	Figure (3)	Designation (4)	Screen Conversion Factor, f (5)
i)	A		Double crimp screen	1.00
ii)	B		Single intermediate crimp screen	1.03
iii)	C		Double intermediate crimp screen	1.06

Table 1 (*Concluded*)

iv)	D		Lock crimp screen	1.03
v)	E		Flat-top screen	1.00
vi)	F		Pressure-welded screen	0.98

NOTE — These factors is given as a guideline. Actual values may vary depending on the manufacturing process.

4.4 Wire screens cannot be produced commercially without there being some manufacturing blemishes. The different type of major blemishes is given in Annex A.

5 REQUIREMENTS

5.1 Aperture Width and Wire Diameter Combination

The aperture width and wire diameter combination shall be as per Annex B. It is recommended to select the aperture width from R 10 series, whenever possible, but if a smaller aperture width is required it should be drawn from R 20 or R 40/3 as per Annex B. Testing for wire diameter and aperture width shall be done as per Annex C. For any combination of aperture width and wire diameter the open area, mass per unit area and mesh count may be calculated as per Annex D.

NOTE — As agreed between manufacturer and purchaser, other aperture width and wire diameter combinations may also manufacture as per IS 18061 : 2023 'Selection of aperture size, percentage open area and wire diameter combinations for industrial screens — Guidelines'.

5.2 Maximum Permissible Errors on Aperture Width

The measurement shall be taken separately in warp and weft directions as per Annex C.

5.2.1 *Maximum Permissible Error on Average Aperture Width* (Y_S)

The maximum permissible errors on average aperture width shall be as per Table 2.

5.2.2 *Maximum Permissible Error on Individual Aperture Width* (X_S)

The maximum permissible errors on individual aperture width shall be as per Table 2. Value exceeding X_S is deemed to be a major blemish. Negative deviations of single aperture widths do not affect the screening process, so values for X_S have only positive deviations, but with a maximum value of $X_\mathrm{S} = w$. This is the maximum permissible deviation of a single aperture measured separately in both warp and weft directions.

Table 2 Tolerances on Aperture Width

(*Clauses* 5.2.1 *and* 5.2.2)

Sl No.	Nominal Aperture Width, w	Tolerances on Aperture Width	
		Average Aperture Width $\pm Y_s$ percent	Individual Aperture Width $+X_s$ percent
	mm		
(1)	(2)	(3)	(4)
i)	Over 31.5 mm up to 125 mm	6	8
ii)	Over 8 mm up to 31.5 mm	8	12
iii)	Over 2.5 mm up to 8 mm	10	18
iv)	Up to 2.5 mm	12	22

5.3 Tolerance on Wire Diameter

The tolerance on wire diameter shall be as given in Table 3. The wire diameter is measured as per Annex C. The tolerance limit shall apply to wire diameter of both warp and weft wire separately.

Table 3 Tolerances on Nominal Diameters

(*Clause* 5.3)

Sl No.	Nominal Diameter of Wire d	Tolerance on Nominal Diameter of Wires Δd percent	
		Steel	Other than Steel
(1)	(2)	(3)	(4)
i)	Over 10 mm and above	1.00	0.75
ii)	Over 5 mm up to 10 mm	2.00	1.5
iii)	Over 1 mm up to 5 mm	3	2
iv)	Over 0.25 mm up to 1 mm	5	3
v)	Over 0.1 mm up to 0.25 mm	6	5
vi)	Up to 0.1 mm	7	6

5.4 Permissible Number of Major Blemishes

The maximum number of major manufacturing blemishes (*see* Annex A) in any roll or roll piece of wire screen shall not exceed the values given in Table 4. Blemishes which do not produce oversize apertures or do not significantly affect the surface quality of the wire screen shall be considered minor manufacturing blemishes.

Table 4 Permissible Number of Major Blemishes

(*Clause* 5.4)

Sl No.	Nominal Aperture Width, w mm	Maximum Number of Major Blemishes Per 10 m^2
(1)	(2)	(3)
i)	$125 \geq w > 63$	2
ii)	$63 \geq w > 31.5$	3
iii)	$31.5 \geq w > 16$	4
iv)	$16 \geq w > 8$	5
v)	$8 \geq w > 4$	6
vi)	$4 \geq w > 2$	8
vii)	$2 \geq w > 1$	10

5.5 Maximum Permissible Error on Overall Size

The overall size of wire screen shall conform to the following requirements:

a) The maximum permissible error on length of wire screen rolls shall be ± 10 percent, and
b) The maximum permissible error on width of wire screen rolls shall be - 0 + 2 percent.

6 DESIGNATION OF WIRE SCREEN

Designation of the wire screen shall comprise the following detail with word 'wire screen':

a) aperture width, w in mm or micrometres;
b) wire diameter, d in mm or micrometres;
c) material of wire screen wires; and
d) types of weave.

Example:

For steel wire screen having lock crimp weave with aperture size of 5.0 mm and wire diameter of 1.6 mm, the designation shall be:

[$w - 5.0$ mm, $d - 1.6$ mm, steel, wire screen, lock crimp]

7 DELIVERY

The wire screen shall be delivered as rolls. A standard roll shall be 15 m, 25 m or 30 m long and of 300 mm, 450 mm, 600 mm, 900 mm or 1 200 mm wide.

8 INFORMATION TO BE SUPPLIED BY THE PURCHASER

The purchaser should state the following with any enquiry and order:

a) designation of the wire screen;
b) wire screen material with its all technical details such as grade/class/types/finish, as per relevant Indian Standards, etc;
c) the overall size of roll; and
d) any other information, if required.

9 MARKING

9.1 The wire screen shall have marked or attached label or tag on which the following information shall be legibly and indelibly marked:

a) manufacturer's name or trade-mark;
b) designation of wire screen;
c) dimensions of wire screen roll;
d) wire screen material with its all technical details such as grade/class/types/finish, as per relevant Indian Standards, etc;
e) batch number or date of manufacture; and
f) any other information, if required.

9.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the product(s) may be marked with the Standard Mark.

ANNEX A

(*Clauses* 4.4 *and* 5.4)

MAJOR BLEMISHES

A-1 BURST

A tear of variable length in the screen arising from unsustainable tension during weaving.

A-2 BROKEN SHOT (WEFT)

A wide aperture or a line of wide apertures left when a broken weft wire partly blocks the laying of the next weft wire.

A-3 CREEPER

A warp wire which is longer than the neighbouring warp wires.

A-4 DRAW-OVER

A certain length of screen containing no weft wires.

A-5 PIN HOLE

Pin hole is the single hole in the screen as a result of broken wire or slack shot.

A-6 REED MARK (TRAMLINE)

Single line of apertures of excessive width in the warp direction.

A-7 SLACK SHOT (WEFT) OR LOOP

A weft wire which is longer than the neighbouring weft wires.

A-8 SMASH

A complex break-up of the weaving pattern.

A-9 VARIATION IN WEFT COUNT

Irregular weft count over a certain length of the wire screen.

ANNEX B

(*Clause* 5.1)

APERTURE WIDTH AND WIRE DIAMETER COMBINATION

Width of Aperture			Diameter of Wire	Open Area
R 10 *w* mm	R 20 *w* mm	R 40/3 *w* mm	D mm	A_o percent
16	16	16	1.60	83
			1.80	81
			2.00	79
			2.24	77
			3.15	70
			3.55	67
	14		1.40	83
			1.80	79
			2.24	74
			2.80	69
		13.2	2.80	68
12.5	12.5		1.25	83
			1.60	79
			1.80	76
			2.00	74
			2.24	72
			2.80	67
	11.2	11.2	1.12	83
			1.25	81
			1.40	79
			1.80	74
			2.00	72
			2.24	69
			2.50	67
			2.80	64
			3.15	61
			3.55	57
10	10		1.12	81
			1.40	77
			1.60	74
			1.80	72
			2.00	69
			2.50	64
		9.5	1.40	76
			1.80	71
			2.00	68
			2.24	65
			2.50	63
			2.80	660
			3.15	56
			3.55	53
	9		1.00	81
			1.25	77
			1.40	75
			1.60	73
			1.80	69
			2.24	64
8	8	8	1.00	79

Width of Aperture			**Diameter of Wire**	**Open Area**
R 10 w mm	R 20 w mm	R 40/3 w mm	D mm	A_o percent
			1.25	75
			1.40	72
			1.60	69
			1.80	67
			2.00	64
			2.24	61
			2.50	58
			2.80	55
	7.1		0.900	79
			1.12	75
			1.25	72
			1.40	70
			1.60	67
			1.80	64
			2.00	61
		6.7	1.80	62
			3.15	46
6.3	6.3		0.800	79
			1.00	74
			1.12	72
			1.40	67
			1.80	60
			2.00	58
			2.24	54
			2.50	51
			2.80	48
			3.15	44
	5.6	5.6	0.710	79
			0.800	77
			0.900	74
			1.12	69
			1.25	67
			1.40	64
			1.60	60
			1.80	57
			2.24	51
5	5		0.710	77
			0.900	72
			1.00	69
			1.25	64
			1.40	61
			1.60	57
			1.80	54
			2.00	51
			2.24	48
			2.50	44
			2.80	41
		4.75	0.900	71
			1.25	63
			1.40	60
			1.60	56
			1.80	53
			2.00	50
			2.24	46

Width of Aperture			**Diameter of Wire**	**Open Area**
R 10 *w* mm	R 20 *w* mm	R 40/3 *w* mm	D mm	A_o percent
			2.50	43
			2.80	40
	4.5		0.630	77
			0.800	72
			0.900	69
			1.00	67
			1.12	64
			1.25	61
			1.40	58
			1.60	54
			1.80	51
			2.00	48
			2.24	45
4	4	4	0.560	77
			0.630	75
			0.710	72
			0.900	67
			1.00	64
			1.12	61
			1.25	58
			1.40	55
	3.55		0.500	77
			0.560	75
			0.630	72
			0.800	67
			0.900	64
			1.00	61
			1.12	58
			1.25	55
		3.55	0.560	73
			0.900	62
			1.25	53
3.15	3.15		0.450	77
			0.500	74
			0.560	72
			0.710	67
			0.800	64
			0.900	60
			1.12	54
			1.25	51
	2.8	2.8	0.450	74
			0.500	72
			0.560	69
			0.710	64
			0.800	60
			0.900	57
			1.12	51
			1.60	40
			1.80	37
			2.00	34
2.5	2.5		0.400	74
			0.450	72
			0.500	69
			0.630	64

Width of Aperture			**Diameter of Wire**	**Open Area**
R 10 w mm	R 20 w mm	R 40/3 w mm	D mm	A_o percent
			0.710	61
			0.800	57
			0.900	54
			1.00	51
		2.36	0.800	56
			1.00	49
			1.80	32
	2.24		0.355	75
			0.400	72
			0.450	69
			0.560	64
			0.630	61
			0.710	58
			0.900	51
2	2	2	0.315	74
			0.400	69
			0.560	61
			0.630	58
			0.710	54
			0.900	48
			1.00	44
			1.25	38
			1.60	31
	1.8		0.315	72
			0.355	70
			0.400	67
			0.500	61
			0.560	58
			0.630	55
			0.800	48
		1.7	0.400	66
			0.630	63
			0.800	46
			1.12	36
			1.40	30
1.6	1.6		0.280	72
			0.315	70
			0.355	67
			0.450	61
			0.500	58
			0.560	55
			0.630	51
			0.710	48
			0.800	44
			1.00	38
		1.4	0.250	72
			0.315	67
			0.450	57
			0.560	51
			0.630	48
			0.710	44
			0.900	37
			1.25	28
1.25	1.25		0.250	69

Width of Aperture			**Diameter of Wire**	**Open Area**
R 10 w mm	R 20 w mm	R 40/3 w mm	D mm	A_o percent
			0.280	67
			0.315	64
			0.400	57
			0.500	51
			0.560	48
			0.630	44
			0.800	37
		1.18	0.450	52
			0.630	43
			0.800	36
			1.00	29
	1.12		0.250	67
			0.315	61
			0.355	58
			0.400	54
			0.450	51
			0.560	44
			1.00	31
1	1	1	0.224	67
			0.250	64
			0.280	61
			0.315	58
			0.355	54
			0.400	51
			0.450	48
			0.500	44
			0.560	414
			0.710	34
			0.900	28
	0.9		0.200	67
			0.224	64
			0.250	61
			0.315	55
			0.355	51
			0.400	48
			0.450	45
			0.500	41
		0.85	0.355	80
			0.400	44
			0.500	40
			0.630	33
			0.800	27
0.8	0.8		0.200	64
			0.250	58
			0.280	55
			0.315	51
			0.355	48
			0.450	41
			0.500	38
	0.71	0.71	0.180	64
			0.200	61
			0.250	55
			0.280	51
			0.315	48

Width of Aperture			**Diameter of Wire**	**Open Area**
R 10 w mm	R 20 w mm	R 40/3 w mm	D mm	A_o percent
			0.355	44
			0.450	37
			0.560	31
0.63	0.63		0.160	64
			0.180	60
			0.224	54
			0.250	51
			0.280	48
			0.315	44
			0.400	37
		0.60	0.280	46
			0.400	36
			0.450	33
	0.56		0.160	60
			0.224	51
			0.280	44
			0.355	37
0.5	0.5	0.5	0.140	61
			0.160	57
			0.200	51
			0.224	48
			0.250	44
			0.280	41
			0.315	38
			0.355	34
			0.400	31
	0.45		0.140	58
			0.200	48
			0.250	41
			0.280	38
			0.315	35
		0.425	0.200	46
			0.280	36
			0.355	30
0.4	0.4		0.125	58
			0.180	48
			0.224	41
			0.250	38
			0.280	35
	0.355	0.355	0.125	55
			0.140	51
			0.180	44
			0.200	41
			0.224	38
			0.250	34
			0.280	31
			0.315	28
			0.355	25
0.315	0.315		0.112	54
			0.160	44
			0.200	37
			0.250	31
		0.3	0.160	43
			0.200	36

Width of Aperture			Diameter of Wire	Open Area
R 10 w mm	R 20 w mm	R 40/3 w mm	D mm	A_o percent
			0.224	33
			0.250	30
	0.28		0.100	54
			0.112	51
			0.140	44
			0.160	40
			0.180	37
			0.224	31
0.25	0.25	0.25	0.100	51
			0.125	44
			0.140	41
			0.160	37
			0.180	34
			0.200	31
	0.224		0.090	51
			0.100	48
			0.125	41
			0.160	34
			0.180	31
		0.212	0.100	46
			0.140	36
			0.160	32
0.2	0.2		0.080	51
			0.090	48
			0.112	41
			0.125	38
			0.140	35
			0.160	31
	0.18	0.18	0.080	48
			0.090	44
			0.112	38
			0.125	35
			0.140	32
0.16	0.16		0.071	48
			0.100	38
			0.112	35
			0.125	32
		0.15	0.063	50
			0.080	43
			0.100	36
			0.112	33
	0.14		0.063	48
			0.090	37
			0.100	34
			0.112	31
0.125	0.125	0.125	0.056	48
			0.063	44
			0.080	37
			0.090	34
			0.100	31
	0.112		0.056	44
			0.071	38
			0.080	34
			0.090	31

Width of Aperture			Diameter of Wire	Open Area
R 10 w mm	R 20 w mm	R 40/3 w mm	D mm	A_o percent
0.1		0.106	0.050	46
			0.056	43
			0.063	39
			0.071	36
			0.080	31
	0.1		0.050	44
			0.063	38
			0.071	34
			0.080	31
	0.09	0.09	0.040	48
			0.045	44
			0.050	41
			0.056	38
			0.063	35
			0.071	31
0.08	0.08		0.040	44
			0.045	41
			0.050	38
			0.056	35
			0.063	31
		0.075	0.036	46
			0.040	43
			0.050	36
			0.056	33
	0.071		0.040	41
			0.045	38
			0.050	34
			0.056	31
0.63	0.63	0.63	0.036	41
			0.040	37
			0.045	34
			0.050	31
	0.056		0.032	41
			0.036	37
			0.040	34
			0.045	31
		0.053	0.036	36
			0.040	33
0.05	0.05		0.028	41
			0.030	39
			0.032	37
			0.036	34
			0.040	31
	0.045	0.045	0.032	34
			0.036	31
0.04	0.04		0.025	38
			0.030	33
			0.032	31
		0.038	0.025	36
			0.030	30
	0.036		0.028	32
			0.030	30
0.032	0.032	0.032	0.025	28
			0.028	26

Width of Aperture			**Diameter of Wire**	**Open Area**
R 10 w mm	R 20 w mm	R 40/3 w mm	D mm	A_o percent
0.025	0.025		0.022	28
			0.025	26
0.02	0.02		0.020	25

ANNEX C

(*Clauses* 5.1, 5.2 *and* 5.3)

TEST METHODS

C-1 WIRE DIAMETER, d

The wire diameter shall be determined by using one of the following procedures:

a) By measuring wires which have been loosened from the wire screen, (*see* Fig. 2);

b) By measuring the wires in the screen, if there is sufficient space for the measuring instrument; and

c) By an optical projection or scanning method.

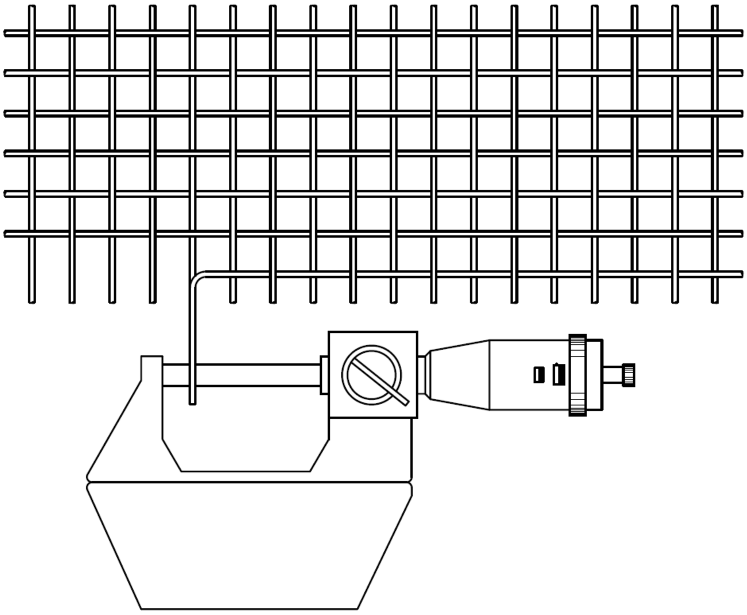


FIG. 2 TYPICAL ILLUSTRATION OF MEASUREMENT OF WIRE DIAMETER LOOSENED FROM WIRE SCREEN

C-2 APERTURE WIDTH, w

C-2.1 Average Aperture Width Maximum Permissible Error, Y_s

C-2.1.1 *Aperture Widths from* 16 *mm and above*

Measure five individual apertures (*see* Fig. 3).

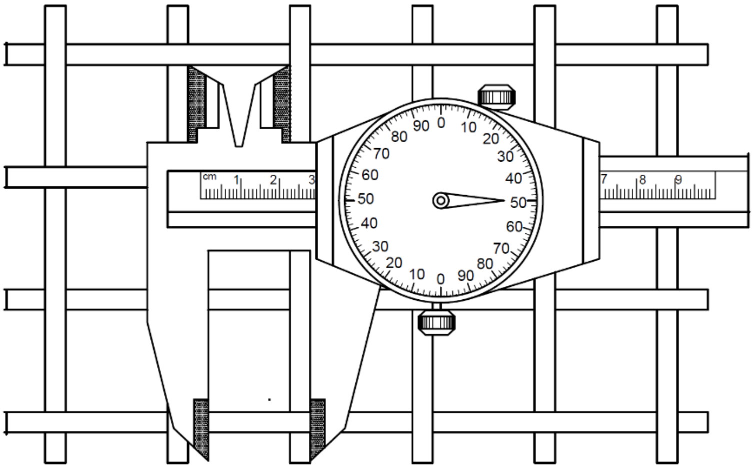


FIG. 3 ILLUSTRATION OF MEASUREMENT UNITS DIAL GAUGE CALLIPERS

C-2.1.2 *Aperture Widths Greater than* 4.0 *mm and up to* 16.0 *mm*

A steel rule, graduated in millimetres, shall be laid along the warp and weft direction of the wire screen. The span of ten pitches shall be measured to the nearest millimetre. The test result shall be divided by ten, to give the average pitch, from which shall be deducted the wire diameter to give average width (*see* Fig. 4). Optical measurement devices are allowed if they provide a resolution of less than 0.1 mm.

C-2.1.3 *Aperture Widths from* 1.0 *mm up to* 4.0 *mm*

The test procedure shall be as described above in **C-2.1.2** but the span of 20 pitches shall be measured and the test result divided by 20, to give the average pitch.

C-2.2 Maximum Permissible Error of Aperture Width, X_s

When evaluating the test results, a margin of 10 mm on both sides of the roll and, for an aperture width exceeding 5 mm, a margin equivalent to two apertures on each side shall be disregarded.

C-2.3 Overall Size

Overall size shall be measured using suitable metal tapes or rules.

C-2.4 Weaving Blemishes

Wire screen shall be checked visually for blemishes.

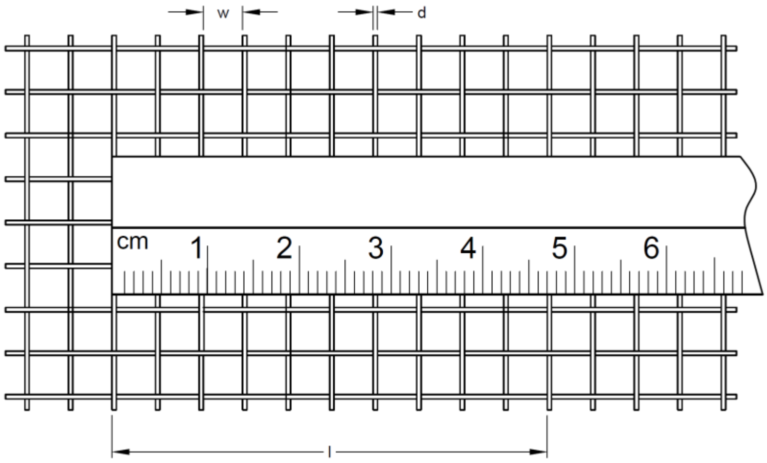


FIG. 4 ILLUSTRATION OF MEASUREMENT OF ROW WITH 10 PITCHES AND 47.5 mm LENGTH

ANNEX D

(*Clause* 6)

OPEN AREA, MASS PER UNIT AREA AND MESH COUNT

D-1 OPEN AREA IN PERCENTAGE

The open area may be calculated as a percentage as the formula given below:

$$A_o = 100\{w/(w+d)\}^2$$

where

A_o = open area in percentage;
w = width of the aperture in mm; and
d = diameter of the wire in mm.

D-2 MASS PER UNIT AREA

The mass per unit area (ρA) of an industrial wire screen or woven wire cloth is given, in kilograms per square metre, by the formula given below:

$$\rho A = \frac{d^2 \rho f}{618.1(w+d)}$$

where

d = diameter of wire, in millimetres;
w = width of aperture, in millimetres;
ρ = material density, in kilograms per cubic metre; and
f = wire screen conversion factor is as per Table given below:

Sl No.	*Type of waves*	*Conversion factor* (f)
i)	Plain weave	1.00
ii)	Lock crimp	1.03
iii)	Intermediate crimp – Single	1.03
iv)	Intermediate crimp – Double	1.06
v)	Flat top	1.00
vi)	Twilled weave	1.00

NOTE — Values for the mass per square metre obtained from the above formula are empirical and based on data collected over several decades.

D-3 MESH COUNT

The identification of a wire screen or woven wire cloth by the dimensions *d* and *w* (*see* Fig. 5) may be carried out by direct measurement of:

a) the wire diameter *d* with a micrometer, and
b) the aperture width *w* with a vernier inside calliper.

The width of apertures which are too small to be measured by calliper may be calculated using the formula:

$$w = \frac{l}{n} - d$$

where

w = aperture width, in millimetres;
l = length covered by *n* apertures and *n* wires, in millimetres; and
n = convenient number of apertures; and
d = is the wire diameter, in millimetres.

For aperture widths of 1 mm and greater, *n* shall be at least 10 and for smaller aperture widths at least 20. For these smaller apertures, the value for *d* shall be determined as an average value of at least five measurements.

The length *Z* shall be measured with a steel rule or in the case of wire cloth with very small apertures, a micrometer magnifying glass.

Example:

A woven wire cloth which has a measured length of 36 mm covered by 10 apertures and 10 wires and a measured wire diameter of 0.45 mm, has an aperture width of

$$w = \frac{36}{10} - 0.45 = 3.15 \text{ mm}$$

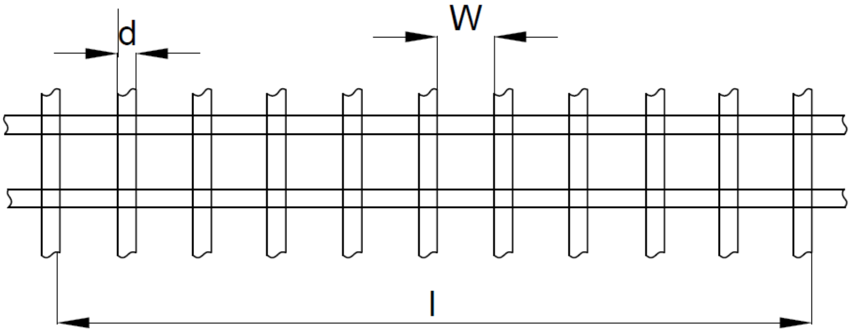


FIG. 5 MESH COUNT OF WIRE CLOTH

ANNEX E

(*Foreword*)

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Sieves, Sieving and Other Sizing Methods Sectional Committee, CED 55

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